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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,371	10/30/2001	Yiqiang Li	2232P	2555

7590 01/03/2003

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EXAMINER
KNAUSS, SCOTT A

ART UNIT	PAPER NUMBER
2874	

DATE MAILED: 01/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/021,371	LI ET AL.	
	Examiner	Art Unit	
	Scott A Knauss	2874	

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 March 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

The corrected or substitute drawings were received on 3/29/02. These drawings are approved.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2002/0071630 (Su et al) in view of US 6,469,847 (Fan et al.).

Regarding claims 1 and 9, Su discloses a dense wavelength division multiplexer (see abstract) comprising:

A dual fiber collimator #40 having fibers #41 and #42

A filter holder #22 having an aperture therein

A filter #10 disposed between the dual fiber collimator and the filter holder, the filter having first and second opposing surfaces, the filter being affixed to the filter holder via a second surface (see paragraph [0020], lines 14-20)

Although Su does not explicitly state that collimator #40 includes a lens and a capillary for holding a pair of fibers, the examiner notes that Su cites several U.S. patents in paragraph [0004], and describes a collimator as consisting of a ferrule (also known as a capillary) holding two optical fibers and also having a GRIN lens, and it would have been obvious to one of ordinary skill in the art to use such a collimator as the collimator #40 holding two optical fibers in order to collimate light to and from the two fibers.

Su also fails to disclose a filter having a first surface being covered with a filter coating.

Nevertheless, such filters are well known in the art. Fan, in particular discloses a similar configuration in fig. 3, wherein a filter (#30A) has a filter layer #34 which is coated onto a surface (see column 2, lines 4-5) in order to filter a range of wavelengths such that some are transmitted and others are reflected (see column 2, lines 4-19)

Therefore it would have been obvious to one of ordinary skill in the art to incorporate a filter comprising a coated filter layer as taught by Fan into the multiplexer of Su in order selectively filter wavelengths and thus perform multiplexing.

Regarding claims 2 and 10, Su, as modified, discloses the use of GRIN lenses.

Regarding claims 3,13 and 15, Su discloses the use of an epoxy to attach the filter to the filter holder (see paragraph [0009], lines 9 and 10) but does not explicitly specify a high temperature epoxy.

Nevertheless, the use of such epoxies is known in the art, and it is desirable to use such epoxies as opposed to UV curing epoxies since the high temperature epoxies produce an attachment of higher strength which is not temperature dependent. Therefore it would have been obvious to one of ordinary skill in the art to use such epoxies to attach the filter to the filter holder to provide such an attachment.

Regarding claims 4 and 11, Su, as modified, fails to explicitly specify the use of a tube for holding and aligning the lens and the capillary. Nevertheless, such tubes are well known in art in dual fiber collimators, and it would have been obvious to one of ordinary skill in the art to incorporate such a tube in the dual fiber collimator disclosed by Su to facilliate alignment between the lens and the capillary.

Regarding claims 5 and 12, Su discloses a mechanism body (holder) (#30) which may have any shape, which serves to hold the collimator, holder and filter. Su does not, however, specify the material from which it is made, specifically, whether it is metal.

Nevertheless, metal holders are well known in the art to hold, protect and align fiber collimators and lens, and thus it would have been obvious to one of ordinary skill in the art to use a metal holder as the mechanism body of Su.

Regarding claim 6, Su, as modified, further discloses attaching the filter holder to a metal mechanism body using epoxy (paragraph [0022] lines 14-15), but does not specify soldering the filter holder to the metal holder.

Nevertheless, such methods of attachment are well known in the art, and are desirable to form high strength permanent connections to metal elements. Therefore it would have been obvious to one of ordinary skill in the art to modify the mechanism of Su to use solder to attach the filter holder to a metal body.

Regarding claims 7 and 14, Su discloses a single fiber collimator #50 optically coupled to filter #10, the filter holder disposed between the filter and single fiber collimator holding an output fiber #51.

Regarding claim 8, Su fails to disclose a anti-reflective coating on the second surface of the filter.

Nevertheless, such coating are well known in the art in such devices, and are desirable in order to prevent light from being back-reflected into fibers #41 and #42 of Su, thus enhancing the multiplexing capability of the device. Therefore it would have been obvious to one of ordinary skill in the art to provide such a coating on the second surface of the filter in order to provide a more effective multiplexing device with better filtering.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 6,185,347 and 6,246,813 (Zheng) detail the use of heat curing epoxy in similar dwdm couplers.

US 6,343,166 (Hellman et al.) discloses a similar dwdm coupler using a filter holder.

US 6,198,858 (Pan et al.) discloses another relevant type of dwdm coupler.

US 5,905,827 (Naganuma et al.) discloses another wdm coupler using a filter holder.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott A Knauss whose telephone number is (703) 305-5043. The examiner can normally be reached on 9-6 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (703) 308 - 4819. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

Scott A. Knauss

Art Unit 2874

sak
December 19, 2002

HEMANG SANGHAVI
PRIMARY EXAMINER